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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,304	01/27/2006	Chungdam Song	SLN-0001	5038

23413 7590 04/10/2007  
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EXAMINER
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PENDLETON, DIONNE

ART UNIT	PAPER NUMBER
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2615

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/10/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/566,304	<b>Applicant(s)</b> SONG ET AL.	
	<b>Examiner</b> Dionne H. Pendleton	<b>Art Unit</b> 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 1/27/2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) n/a is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 January 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

**Figure 1** should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. **Claims 1-3 and 13** are rejected under 35 U.S.C. 102(e) as being anticipated by **Yonehara (US 2003/0161491)**.

**Regarding claim 1,**

**In figure 1**, Yonehara teaches a surface mountable electret condenser microphone comprising a case **32**, a polar ring **34b**, a diaphragm **34a**, a spacer **38**, a back-plate **40**, a first base **36**, a second base **42**, and a printed circuit board (PCB) **52**, wherein the first base **36** surrounds the diaphragm **34a**, the spacer **38** and the back-plate **40**, thereby preventing deterioration of characteristics of an electret formed on any one of the diaphragm and the back-plate in a reflow process for surface mounting.

**Regarding claim 2,**

**In figure 1**, Yonehara teaches a surface mountable electret condenser microphone comprising a case **32**, a polar ring **34b**, a diaphragm **34a**, a spacer **38**, a back-plate **40**, a first base **36**, a second base **42**, and a printed circuit board (PCB) **52**, wherein the first base **36** surrounds an electret formed on any one of the diaphragm **34a**, and the back-plate **40** (*see paragraphs [0042] and [0045]*), thereby preventing deterioration of characteristics of an electret formed on any one of the diaphragm and the back-plate in a reflow process for surface mounting.

**Regarding claims 3 and 13,**

**In paragraph [0042]**, Yonehara teaches a surface mountable electret condenser microphone as claimed in claim 1, wherein at least one of the first base, the diaphragm, the spacer and the back-plate is made from any one selected from polymer-based materials of ASA, Nylon 6, Nylon 66, Nylon 46, LCP, PBT, PC, PC/ABS, PC/PBT, PEEK, PEN, PES, PET, PMMA, POM, PTFE, SAN, **PPS**, SBR and TPU, and in

**paragraph [0045]**, from fluoro resin-based materials of PTFE(TFE), **FEP**, PFA, ETFE, CTFE, PVDF, PVE, PCTFE, ECTFE, EPE, Nylon 6, PP and hard PVC.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 4-6 and 14-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yonehara (US 2003/0161491)** in view of **Hiramoto (US 6,999,596)**.

**Regarding claims 4 and 14,**

Yonehara teaches a surface mountable electret condenser microphone as claimed in claim 1, wherein the PCB allows various components to be mounted thereon. Yonehara does not clearly teach that the components are soldered by cream solders for high temperature.

In **column 18, lines 42-43**, Hiramoto teaches that cream soldering techniques are well known in the art. It would have been obvious for one of ordinary skill in the art at the time of the invention to employ the cream soldering techniques claimed, as an alternative method for connecting the microphone circuit parts to the PCB.

**Regarding claims 5 and 15,**

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In **paragraph [0039]**, Yonehara teaches a surface mountable electret condenser microphone as claimed in claim 4, wherein the PCB allows IC devices to be mounted thereon, the IC devices including a field effect transistor.

**Regarding claims 6 and 16,**

In *column 19, lines 62-65*, Hiramoto teaches a IC having built in a gain amplifier mounted thereto.

3. **Claims 7 and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yonehara (US 2003/0161491)** in view of **Hiramoto (US 6,999,596)** as applied to claim 4 above, and further in view of **Kay (US 6,741,709)**.

**Regarding claims 7 and 17**

The combined disclosures of Yonehara and Hiramoto teach a surface mountable electret condenser microphone as claimed in claim 4, wherein the PCB allows IC devices to be mounted thereon. The combined disclosures do not clearly teach that the IC device includes an analog-digital converter for digital conversion.

In *column 5, lines 7-12*, Kay teaches an IC including an analog-digital converter. It would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate a A/D into the IC device of Yonehara, for the purpose of converting the analog output of the microphone to a digital signal.

4. **Claims 8 and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yonehara (US 2003/0161491)** in view of **Hiramoto (US 6,999,596)** as applied to claim 4 above, and further in view of **Furst (US 2002/0106091)**.

**Regarding claims 8 and 18,**

The combined disclosures of Yonehara and Hiramoto teach a surface mountable electret condenser microphone as claimed in claim 4, wherein the PCB allows IC devices to be mounted thereon. The combined disclosures do not specifically teach that the IC device includes a decimation filter and a digital interface.

In **paragraph [0018]**, Furst teaches an IC device including a decimation filter and a digital interface. It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Yonehara, Hiramoto and Furst, providing a decimation filter and a digital interface for communicating with the analog to digital converter so as to provide the input data at three times a symbol rate.

5. **Claims 9-11,19,20 and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yonehara (US 2003/0161491)** in view of **Jore (US 7,109,625)**.

**Regarding claim 9 and 19,**

Yonehara teaches a surface mountable electret condenser microphone as claimed in claim 1, wherein the PCB (52) is provided with a connecting terminal (56a-d) for connecting with an external circuit. Yonehara does not clearly teach that the

connecting terminal is formed with at least one groove for discharging gases generated in the reflow process for surface mounting.

In **Figure 6a**, Jore teaches a connecting terminal arrangement in the same field of endeavor wherein the PCB is provided with a gas exhaust groove **(49)** for exhausting gas. It would have been obvious for one of ordinary skill in the art at the time of the invention to alter the Yonehara device per the teachings of Jore, so as to allow for heat dissipation in the microphone during the surface mounting process.

**Regarding claim 10 and 20,**

Yonehara teaches a surface mountable electret condenser microphone as claimed in claim 9, wherein the connecting terminal includes a terminal for Vdd connection **(56A; see paragraph [0052] wherein Yonehara teaches connection to a power supply)**. Yonehara does not clearly teach that the Vdd connection is circular, nor that it is in the center, or that annular sector ground terminals are evenly spaced apart from each other along the periphery.

In **Figure 6a**, Jore teaches a connecting terminal arrangement in the same field of endeavor wherein a central terminal **48** is provided. In **figures 7-11**, Jore further teaches that terminal conductors in various configurations may be provided. It would have been obvious for one of ordinary skill in the art at the time of the invention to alter the Yonehara device per the teachings of Jore, providing the claimed terminal arrangement, as a matter of design choice.



**Regarding claims 11 and 21,**

The combination of Yonehara and Jore teaches a surface mountable electret condenser microphone as claimed in claim 9, wherein the connecting terminal (**56A-56D** in **figure 1** of Yonehara) protrudes to be higher than a curled surface of the electret condenser microphone, whereby facilitating connection with another PCB in the reflow process for surfacing mounting.

6. **Claims 12 and 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yonehara (US 2003/0161491)** in view of **Jore (US 7,109,625)** as applied to claim 9 above, and further in view of **Hiramoto (US 6,999,596)**

**Regarding claims 12 and 22,**

The combined disclosures of Yonehara and Jore teach the invention of claim 9. The combined disclosures do not clearly teach that the connecting terminal has a ball grid array.

In *column 17, lines 60-63*, Hiramoto teaches a terminal arrangement in the same field of endeavor, wherein a terminal array (**61a, 61b, 61c**) may be processed by way of well known technology such as solder ball techniques, interpreted as reading on "ball grid array" claimed. It would have been obvious for one of ordinary skill in the art at the time of the invention to alter the Yonehara device per the teaching of Hiramoto,

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providing a terminal ball grid array for high temperatures, as an alternative design choice.


**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dionne H. Pendleton whose telephone number is 571-272-7497. The examiner can normally be reached on 9-5:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
D. Pendleton

  
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